

MSC Guidelines for Generation of a Tank Barge's Plan Review Information Sheet (PRIS)

Procedure Number: T1-11

Revision Date: 01/13/00

References

- a. 46 CFR, Subchapter D
 - b. 46 CFR, Subchapter I
 - c. 46 CFR, Subchapter O, Part 151
 - d. 46 CFR, Subchapter S
 - e. ABS Rules for Building and Classing Steel Barges, 1991
 - f. ABS Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways, 1995
 - g. Navigation and Vessel Inspection Circular (NVIC) No. 1-98, Loading Considerations for Existing Inland Tank Barges
 - h. Navigation and Vessel Inspection Circular (NVIC) No. 10-94, Guidance for Determination and Documentation of the Oil Pollution Act of 1990 (OPA 90) Phase-Out Schedule for Existing Single Hull Vessels Carrying Oil in Bulk
 - i. 46 USC 3703a
 - j. 33 CFR 157
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Disclaimer

These guidelines were developed by the Marine Safety Center staff as an aid in the preparation and review of vessel plans and submissions. They were developed to supplement existing guidance. They are not intended to substitute or replace laws, regulations, or other official Coast Guard policy documents. The responsibility to demonstrate compliance with all applicable laws and regulations still rests with the plan submitter. The Coast Guard and the U. S. Department of Transportation expressly disclaim liability resulting from the use of this document.

Contact Information

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Discussion

- The MSC's Domestic Tank Vessel Branch (C1) is responsible for reviewing general arrangements, stability, and structural items for tank barges. The results of these reviews may be captured in a PRIS document, used to aid the local inspection in updating a vessel's Certificate of Inspection (COI) with appropriate loading
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restrictions. The loading restrictions typically indicated the maximum allowed density of cargo and weight limits allowed per tank, based on review of the structural design and stability calculations. The Foreign Tank Vessel Branch (C2) is responsible for reviewing cargo piping and vapor control systems, and generates 46 CFR 151 cargo authority lists upon request by the owner/submitter, with the receipt of a tank group characteristics form. For existing vessels, generation of an updated cargo authority list does not always require generation of a new PRIS document. However, in many other cases a new or updated cargo authority list also requires generation of a new PRIS document, when any of the following apply:

- ☐ For all vessels under new construction.
- ☐ For existing vessels, when the updated cargo authority involves any of the following:
 - ☐ increase of authorized maximum cargo density
 - ☐ changes in required hull type or designated route
 - ☐ changes in applicable regulations from Subchapter O, Part 151 to Part 153 (e.g. a request is made to carry a cargo listed under Part 153,

General Review Guidance

- ☐ If the vessel is new and not a sister vessel, has the Application for Inspection been submitted? In general, no plan review will occur until receipt of a copy of the Application.
- ☐ Is it clearly stated what is desired from the MSC? Are all plans requiring Coast Guard review and/or approval submitted in triplicate? Are there any special or unusual requests involved?
- ☐ Is the vessel being reviewed under NVIC 10-82? If yes, then MSC review of structure and longitudinal strength is not required. Note: under NVIC 10-82, the MSC must review and approve general arrangement plans.
- ☐ Is the vessel being classed by ABS? If yes, check the vessel file for ABS letter/drawings or request from submitter/ABS. As stated in 46 CFR 31.10-1(c), CG considers ABS structural review for class as acceptable for showing compliance with US structural regulations.
- ☐ Is the vessel being reviewed under NVIC 3-97? If yes, then MSC review of stability items is not required.

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- ❑ Verify applicability of regulations, based upon information in the submission. Most tank barges will fall under a dual 46 CFR, Subchapter O/D classification, although O/I is also possible (a PRIS is not required for a tank barge certificated only under Subchapter D). Verify the correct Hull Type (I, II, or III) as well. See 46 CFR 30.01, 90.05, and 150.110.
- ❑ Generation of a PRIS is completed after a full review of all general arrangements, structural, and stability items. The PRIS document specifies route, cargo authority, conditions of carriage, and liquid bulk cargo authority information, as an aid for inclusion in the vessel's COI (see attached example). Loading constraints include maximum cargo density and cargo weight per tank, based on the minimum values determined between the stability and structural design reviews.
- ❑ Refer to each of the applicable MSC Guidelines for Review of General Arrangements, Structural, and Stability, for guidance on review of these plans and calculations. Highlighted items of these reviews are listed below.
- ❑ Protective spaces & voids
 - ❑ If certificated under Subchapter D only, an existing tank barge may be single skin, with no protective voids, unless designation of a hull type under 46 CFR 32.63-1 applies. However, if the barge carries an "oil" as defined by 33 CFR 157, then OPA '90 applies, and:
 - ❑ In general, tank vessels with building contracts awarded after June 30, 1990 require double bottoms and double sides with the void dimensions as specified in 33 CFR 157.10d(c). However, a typical inland tank barge requires a minimum of 2 ft double bottoms and sides, if the vessel is less than 10,000 dwt and operated on inland or limited short protected coastwise routes, per 33 CFR 157.10d(d).
 - ❑ Pre June '90 single-skin hulls have phase-out requirements as specified in 33 CFR 157, Appendix G. See also references (h) and (i).
 - ❑ If a Hull Type is designated, then the following void dimensions are required (see 151.15-3(d)):
 - ❑ Type I:
 - ❑ 4' side and box end void
 - ❑ 25' rake bulkhead for lead barges
 - ❑ 15" bottom inspection clearance

General Arrangements

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- Type II:
 - 3' side and box end void
 - 25' rake bulkhead for lead barges
 - 15" bottom inspection clearance
 - Type III: none required
- Structures
 - Verify the barge has met applicable ABS structural rules (reference (e) or (f)), dependent upon route. As stated in 46 CFR 151.10-15, if greater than 5% from uniform loading is desired, then longitudinal strength calculations, as well as buckling strength should be verified (reference (g)). Additionally, the following structural calculations are required, if a Hull Type is designated (see 151.10-20(b)):
 - Type I/II:
 - for oceans route, a slosh loading and buckling analysis are required
 - a pinnacle grounding analysis is required, which should always be met if properly built to ABS rules. (46 CFR 32.63-20)
 - Type III:
 - if length >300', then a buckling analysis is required
 - no pinnacle grounding analysis is required
 - Verify the barge's compressive deck stresses and collapse strength, according to the guidance of reference (g)
 - Conduct a slosh loading analysis according to the guidance of reference (e).
- Stability
 - Verify the barge has met applicable intact and damaged stability requirements. In general, use the attached stability matrix as a reference to determine which criteria apply. Note the following comments:
 - No stability calculations are required for inland tank barges certificated only under Subchapter D, unless stability is questioned by the OCMI.
 - Barges must meet 46 CFR 173, Subpart B if equipped to lift; and 46 CFR 174, Subpart B if cargo is carried above the weather deck (as in most Subchapter O/I barges)

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- ❑ Type I damaged stability is a 2 compartment standard, side and bottom damage, while Type II is a modified 1 compartment standard. The deck edge must not submerge to survive. No damaged stability is required for Type III, if only an inland route.
- ❑ Type I & II intact requirements are generally the same, from 46 CFR 172, Subpart E (righting energy (5/10/15), GM_L , and GM_T requirements).

Attachments

- ❑ Sample PRIS
- ❑ Tank Vessel Stability Matrix